

REMARKS

The present remarks and amendments are responsive to the Office Action mailed on April 02, 2004. Claims 1-43 are pending in this application. The abstract of the present application has been rewritten to overcome the Examiner's objection.

Accompanying this communication is a new set of drawings (labeled as replacement sheets) to reflect the changes requested by the Examiner. Specifically, sheet 1/4 has been amended with requested "Prior Art" and descriptive labeling to address the Examiner's concerns. No new matter has been presented. Support for the amendments, the abstract of the disclosure, and the drawings can be found, *inter alia*, in Applicant's original specification and original claims. Also accompanying this communication is a petition to extend the prosecution on this matter for two months and the appropriate fee. By the following remarks, the pending claims are now believed to be in condition for allowance and are presented for reconsideration.

Accordingly, pending claims 1-43 are presented for reconsideration and are believed to be in condition for allowance in light of the following remarks.

Discussion of the Office Action

In the Office Action of April 02, 2004, the Examiner rejected claims 1-43 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner objected to the abstract of the disclosure because "it is not adequately descriptive" as required under MPEP § 608.01(b). Finally, the Examiner objected to the drawings because Fig. 1(a) did not have a "Prior Art" label and because items 104 and 106 in Fig. 1(b) requires a descriptive label as per 37 CFR §1.84(o).

Discussion of Rejection of Claims 1-43 under 35 U.S.C. §112

As set forth above, claims 1-43 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding independent claims 1, 17, 30, and claim 41, the Examiner states that, "the use of the term "Dynamic" along with the word "series" (with respect to the images produced) makes the claim unclear as to whether the method and apparatus produce a series of still images or a moving image (i.e., a movie)." Applicant respectfully must traverse such an argument.

Under the second paragraph of 35 USC 112, it is incumbent on the examiner to establish that one of ordinary skill in the pertinent art, when reading the claims in light of the supporting specification, would not have been able to ascertain with a reasonable degree of precision and particularity the particular area set out and circumscribed by the claims." *Ex parte Wu*, 10 USPQ 2d 2031, 2033 (B.P.A.I. 1989)

Moreover, Under MPEP §2173.02, “The examiner’s focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. § 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available...he or she should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness.”

Applicant respectfully submits that the **claims at issue are clear and precise** and **not indefinite** and that Applicants’ specification enables one skilled in the art **to reasonably ascertain the scope of the claims in light of the supporting specification** as mandated under Ex Parte Wu and MPEP §2173.02 respectively.

As an illustrative example of the term “Dynamic” (see lines 4-10, page 2, paragraph [00004]), Applicant states, “[s]eismology, however, is an inherently blind methodology, whereby the seismic waves are recorded by the effect they have on instruments as the seismic waves pass by.... If these [dynamic] waves can be imaged in real time, actual [movies] of these waves can be produced yielding more information about their source and the structure they propagate through.” Correspondingly, Applicant states (see lines 10-15, page 7, paragraph [00019]), “[t]he present invention, Dynamic Interferometric Synthetic Aperture Radar (Dynamic InSAR) incorporates a sampling method and an improved single antenna design that can form real-time

images and measure fast-moving surface waves on water (Tsunamis) and land (seismic surface waves)."

As an example of describing the term "series", Applicant states in the specification on lines 12-16, page 15, first sentence of paragraph [00030], "[a]ccordingly, a series of phase differential maps (interferograms) by the method and system of the present invention is obtained by imaging a plurality of interreferometric phase differences along a synthetic aperture".

Therefore, Applicant respectfully submits that the term "Dynamic", along with the word "series" (with respect to the images produced), as set forth in the specification and claims, defines imaging fast moving (i.e., Dynamic) surface waves by obtaining a set of individual frames (i.e., a series of interferometric images) to comprise a moving image of such waves, i.e., a movie.

Accordingly, Applicant submits that because such language makes clear and precise the boundaries of the subject matter for which protection is sought to one of ordinary skill in the art, the rejection of independent claims **1, 17, 30**, and claim **41** under 35 U.S.C. §112, second paragraph for utilizing such language, is deemed improper and is requested to be withdrawn.

Regarding claim **22**, the Examiner states that, "the use of parentheticals makes the claims unclear. If the parenthetical matter is to be retained, it must be set off in commas rather than in parentheses."

Claim 22 and claim 40 (which include similar limitations) have been amended to comport with the Examiner's suggestion. In light of the amendments, the issue is rendered moot.

Regarding claims 1, 17, and claim 30, and claim 41 with respect to the uses of the words "differentials" and "difference", the Examiner states that, "the uses of the words 'differentials' and 'difference' are indefinite and unclear in context. Independent claims 1, 17, and 30 use the word 'differentials' but independent claim 41 uses the word 'difference'. Thus, it is unclear if the uses of the different claims mean the same thing or something different. If they mean the same thing, then the usage should be corrected to be uniform throughout the claims." The Applicant respectfully traverses such a rejection.

Applicant submits that the uses of the words "difference" and "differentials" **do not mean the same thing** and that such uses **are not unclear and indefinite**. In describing the operation of a dual-phase center InSAR apparatus as shown in claim 41, Applicant states (see specification, lines 3-12, page 14, paragraph [00027]), "[a]n ATI exploits the short time delay between two similarly collected SAR images from dual phase centers spaced in the along-track (azimuth) direction. The radar backscatter received at the two antennas are identical except for a change that occurs in the ground scattering characteristics during a lag time interval (t_{lag}), i.e., the time it takes for the trailing (aft) phase center to travel to the position of the leading (forward) phase center. Therefore, a lag time interval for this embodiment is equal to the ratio of a baseline B

(the distance between the two phase centers) and a SAR platform velocity (V_{plat}), i.e., $t_{lag} = B/V_{plat}$. Subtracting the [phase] between the two images results in a (short) temporal [difference] occurring during t_{lag} being non-zero." Moreover, on lines 12-16, page 15, first sentence of paragraph [00030], Applicant states "[a]ccordingly, a series of [phase differential] maps (interferograms) by the method and system of the present invention is obtained by imaging a plurality of interreferometric [phase differences] along a synthetic aperture". In addition, the third element of original claims 17 and 30 (which under MPEP §2163.07 are part of the disclosure) states, "subtracting a [phase difference] having said time lag t_{lag} to produce a [phase differential] at each of said platform positions" Therefore, Applicant's term "phase difference" is referring to a constant phase shift between all corresponding pixels in an interferometric pair due to an offset between the phase centers of two antennas, or a single antenna with two electronically offset phase centers. The term "phase differentials" however, as shown in original claims 1, 17 and 30, refers to small changes in phase between corresponding pixels in two SAR images that comprise an interferogram (i.e., an interferometric pair).

Accordingly, Applicant respectfully submits that rejection of claims 1, 17, 30, and claim 41 under 35 U.S.C. §112, second paragraph for utilizing such language, is requested to be withdrawn.

Further regarding claim 41, the Examiner states, "the 'wherein...' phrase makes it unclear as to whether the material is a statement of intended use or the limitation of some structure."

Claim 41 has been amended to address the Examiner's concern. In light of the amendment, the rejection of claim 41 under 35 U.S.C. §112, second paragraph is respectfully requested to be removed.

Further regarding claim 41, the Examiner states, "it is never stated what the 'phase difference' is calculated between....."

In light of the amendment to claim 41, the rejection under 35 U.S.C. §112, second paragraph is respectfully requested to be removed.

Objection to the Abstract

As set forth above, the abstract of the disclosure is objected to because the Examiner states that, "it is not adequately descriptive" as required under MPEP § 608.01(b). In light of the amendment to the abstract, such an issue is deemed moot.

Objection to the Drawings, i.e., Figures 1(a-b)

The objection to the drawings has been overcome by the amendments thereto.

RECONSIDERATION

The undersigned respectfully submits that, in view of Applicants' arguments and amendments, the objection to the drawings, to the abstract of the disclosure, and to the rejections of the claims raised in the Office Action dated April 02, 2004 have been fully addressed and overcome and the present application is believed to be in condition for allowance.

It is respectfully requested that this application be reconsidered, that pending claims 1-43 be allowed, and that this case be passed to issue. In the event that the Examiner finds any remaining impediment to the prompt allowance of these claims that can be clarified with a telephone conference, she is respectfully requested to initiate the same with the undersigned at (925) 422-3682.

Respectfully submitted,

Dated: 8/20/04



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Enclosures:
Drawings (4 Replacement sheets)
Extension and Fee for Extension of Time